HMEP

Highways Maintenance Efficiency Programme

Development of Standard Specification and Standard Details for Local Highway Maintenance

Version 1 – November 2012

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REVISION SCHEDULE

Rev	Date	Details	Prepared by	Reviewed by	Approved by

This document is released as an Interim Document to allow its use by local highway authorities as early enablers in the development of their term service contracts, feeding into the ongoing development of the Highways Maintenance Efficiency Programme Standard Term Maintenance Contract and Document Compiler work package.

If you wish to make a comment or contribute to the development of the document, please send an email to

highwaysefficiency@DfT.gsi.gov.uk

with the header 'Feedback on the Standard Specification and Standard Details'.

This report is supported by the following organisations:

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FOREWORD

ABOUT THE HIGHWAYS MAINTENANCE EFFICIENCY PROGRAMME

The Highways Maintenance Efficiency Programme (HMEP) is a sector-led transformation initiative that will maximise returns from investment and deliver efficiencies in highway maintenance services. The Programme started in April 2011 with sponsorship from the Department for Transport and is intended to run until 2018.

The Programme is offering local highway practitioners benefits from different ways of working. The vision is that over time, those involved in highways maintenance delivery, the local authorities as clients and their service providers, be they from the private or public sector will adopt an ambitious and longer-term approach to enable them to:

- Continuously find new and improved ways of delivering services to highway users and managing highways assets.
- Make use of collaborative partnerships to improve processes and outcomes.

Deliver a sustainable balance between meeting the needs of highways users, improving quality and minimising costs.

The overall programme has been developed by the Programme Board through key personnel who support HMEP's development. This will ensure that:

- The Programme is truly being driven by what the whole sector needs and wants ('by the sector for the sector').
- The solutions identified by the sector are relevant, realistic, repeatable, scalable and sustainable.
- HMEP is benefits-led, driving true transformation of the sector with tangible efficiency gains and a lasting legacy.

As a transformation initiative HMEP is targeting the ways local highway authorities conduct their business. It invites the sector to adopt new ways of working to deliver efficiency savings through:

- **Collaboration & Change** - looking at how alliances between authorities, and clients and their providers, can be formed to deliver efficiencies in the delivery of highway maintenance services. Other projects are looking at changing business processes; for instance by applying Lean thinking to the processes behind service delivery and how services or processes can be streamlined to realise efficiencies.

- **Procurement, Contracting and Standardisation** – advising on the routes to procurement enabling authorities to determine how their current service is aligned to current thinking and which is the best procurement option to realise their future service ambitions. It also provides the tools so that efficiencies can arise through the use of, for instance, a standardised form of contract and highway maintenance specification which are better aligned to the activities that local highway authorities undertake.

- **Asset Management** – by providing advice to the sector in the form of updated asset management guidance; for both a simplistic and, where appropriate, more complex lifecycle planning tool to determine whole life asset costs, thus moving away from a reactive to a longer-term approach for maintaining highways assets. To provide training specifically targeted at practitioners to help them move towards an asset management approach and to adopt the new HMEP guidance and tools.

- **Benchmarking & Performance** – collecting, sharing and comparing performance data on Customer/Quality/Cost to help both understanding to show how effective local highway authorities are in delivering Value for Money services and drive targeted efficiencies.

Products and tools are being developed for each of these themes and are being designed to be interdependent, but complementary, so that authorities can maximise their returns from their investments.

ABOUT THIS TOOLKIT

The HMEP survey of the sector of October 2011 indicated that 97% of those local highway authorities responding wanted a specification that was more aligned to the maintenance activities that they undertake, as opposed to the current Specification for Highway Works which is aimed at new road construction. In response to this, HMEP has prepared this guidance for the development of a Standard Specification and Standard Details for Local Highway Maintenance.

This is the first release of the document and is aimed at the areas where local highway authorities incur the greatest maintenance expenditure; namely in highway drainage, kerbing and footway works, bituminous surfacing, structural concrete, structural steelwork and winter maintenance activities. The guidance is based on documents returned as part of each authority's response to the survey. The content of this guidance draws on the good practice within specifications developed for recent tenders and for contracts that are about to be procured, making the content as current as possible.

This guidance represents the beginning of a review of the full range of services local highway authorities undertake. A new product is currently in development that will expand on the scope of the guidance to all series of the specification and incorporate outcome specifications. This is programmed for release towards the end of 2013. However, the sector is encouraged to start to move towards a standardised approach by using this document.

A consistent approach will help to align the documents to the range of services that local highway authorities undertake with associated pricing schedules, method of measurement and bill item generation. This product will be presented with the HMEP suite of procurement documents (IfT, OJEU, PQQ and Form of Contract) within a document compiler platform to enable local highway authorities to procure Term Service Contracts as well as individual projects while moving towards an e-tendering solution.

Significant savings are expected through adopting a standard specification across the sector. The many bespoke forms that currently exist will be rationalised to a single common form. The HMEP version will also be maintained centrally and be updated regularly, saving the resource commitment within each authority to update and maintain their own standard forms. There is also the potential for wider savings throughout the supply chain as all become familiar with the new specification and move away from bespoke forms towards a consistent approach. Authorities are therefore encouraged to start using this guidance now to move towards the aims and ambitions of the wider programme for the sector.

Authorities should resist the temptation to bespoke the specification to suit their particular local needs. If you consider that certain aspects need to be included, please relay the information with the rationale for its inclusion back to the Programme for consideration. If deemed appropriate, it will be included within the next update.

ABOUT THIS DOCUMENT

In 2010, Infrastructure UK produced the Infrastructure Cost Review report highlighting that simplification of procurement specifications and better procurement in the public sector could reduce costs by at least 15%. From this, an industry standards group was established in the infrastructure sector to examine the simplification of procurement specifications and the removal of unnecessary technical standards. The outcome was a report to government specifying Successful Standards. With the current economic climate and fierce competition in construction highway maintenance services, the focus on both the public and private sectors has been to work collaboratively on procurement initiatives to develop highway term service maintenance contracts that provide best value services at the lowest possible cost. This document aims to achieve a consistent approach to specifying highway maintenance materials and outcomes in response to the objectives of the above report.

The Standard Highway Maintenance Specification and Standard Details are part of the Procurement, Contracting & Standardisation theme. It is recognised that the sector could benefit from wider standardisation and the savings that could accrue. However, before procuring, each authority needs to ask if they could achieve greater benefits if they can collaborate with others to achieve economies of scale and thereby adopt the specification across the authorities. Before deciding on whether or not to adopt this product, authorities should ask themselves if they can achieve similar levels of savings by maintaining and using their current documentation. The case should not be to retain their existing systems but to adopt one that is standard across the sector.

All Local Highway Authorities deliver services whether they be from in house or external providers. To do this, Authorities have developed their own unique contract documents albeit they are often based on common national forms. However, evidence from the

survey of the HMEP sector in October 2011 indicates that authorities expend substantial resource in developing and maintaining their own forms of contract. They also operate contracts using outdated documentation. Their service providers are also faced with numerous forms of contract incurring unnecessary expense in deciphering the bespoke contract terms and developing pricing strategies accordingly.

Steps have already been made towards the rationalisation of this problems by the creation of joint standards within regional alliances such as the Midland Highways Alliance and Transport for London. Within these areas savings have already been recognised through the harmonisation of the standards of individual authorities, and the work of the HMEP briefs seeks to build upon those foundations.

The potential for achieving savings through adopting a Standard Highway Maintenance Specification and Standard Details is substantial in terms of:

- Reduced document maintenance.
- Updating to a current contract documentation.
- A consistent understanding of the contract documents by the service providers allowing a consistent strategy for pricing the associated items and risk.

The objectives of this project are to:

- Identify the “best value for money for ” highway maintenance materials.
- Rationalise the current number of material specifications, particularly bituminous surfacing specifications.
- Provide material specifications that could be used by all Local Highway Authorities for highway maintenance work.
- Embed climate change and sustainability consideration at design stage.

The Standard Highway Maintenance Specification concentrates on the areas where authorities expend the greatest money, principally:

- Series 500: Drainage & Service Ducts.
- Series 700: Road Pavements – General (Bituminous materials only).
- Series 900: Road Pavements (Bituminous materials only).
- Series 1100: Kerbs, Footways and Paved Areas (Bituminous materials only).
- Series 1200: Traffic Signs and Road Markings (Road Markings and Road Studs only).
- Series 1300: Road Lighting Columns & Brackets.
- Series 1700: Structural Concrete.
- Series 1800: Structural Steelwork.

- Winter Maintenance Activities (materials only).

During 2011 all Local Highway Authorities in England were invited to take part in a survey to determine the number and nature of variations to the Department for Transport Manual of Contract Documents for Highway Works, Specification for Highways Works, Notes for Guidance on the Specification for Highway Works and Highway Construction Details. Each Authority was also invited to contribute to the project by providing copies of any variation to the Specification for consideration, or any unique standard details that they may use.

By early 2012 information had been provided from 67 Authorities (a response rate of approximately 44%), with additional information still being provided from other Authorities, regional and industry groups.

This information showed the number of unique variations to the Specification for Highways Works that are currently in use, and acts as an indicator of areas in which efforts could be focussed to standardise products. As part of the review process duplications of the Specification for Highways Works used by Local Highway Authorities were removed from these figures, as were duplications of specifications between individual Local Highway Authorities.

A breakdown of the number of documents provided by the local authorities for each Series of the Specification for Highways Works under consideration by the HMEP project is shown in the table below.

Series	Number of Variations to Specification for Highways Works
Series 500 – Drainage and Service Ducts	18
Series 700 / 900 – Road Pavement – General & Bituminous Bound Materials	44
Series 1100 – Kerbs, Footways and Paved Areas	31
Series 1200 – Traffic Signs – Road Markings and Road Studs	15
Series 1300 – Road Lighting Columns and Brackets	10
Series 1700 – Structural Concrete	37
Series 1800 – Structural Steelwork	0
Winter Maintenance Materials	9 (Winter Maintenance Plans)

The information was examined against national documents to confirm its relevance and, where benefits could be identified, the information was developed and incorporated into this document. Evidence of current best practice from the survey responses has been considered and developed into the proposed variations.

This HMEP Specification is intended to provide amended and additional specification clauses to better align the Manual of Contract Documents for Highway Works series to the highway maintenance activities that Local Highway Authorities undertake. These clauses will supplement those within the Manual of Contract Documents for Highway Works.

No changes to the specification series have been made where there is no evidence of substantial changes to the specification being made by Local Highway Authorities. Wherever possible the many clauses with minor specification variances (such as bound materials) have been rationalised as a restricted scope that will help to drive down costs within the supply chain. This is supplemented by providing better guidance to practicing engineers as to which materials are best suited to particular circumstances, thereby avoiding the need to retain a historic specification clause or material.

The intention is that this standard specification will replace the many Local Highway Authority bespoke forms currently in use. The case to maintain an authority's bespoke documentation needs careful consideration. Given that we are in austere times, authorities need to evidence that they are spending their budgets wisely.

The HMEP standardised product provides a specification that the authority does not have to develop, maintain and review, and offers a substantial saving as a result.

The document links into other HMEP products covering:

- Standard forms of Contract
- Routes for procurement
- Methods of collaboration between Authorities
- Shared service provision between Authorities
- HMEP Pothole Review

Therefore, authorities need to consider carefully why they should not adopt these standard forms and to commit resource and budgets to the maintenance and develop their own documentation.

COMMENTS AND FEEDBACK

The HMEP Programme Board would welcome any comments and feedback on this document so that the final product may be reviewed, improved and refined to give the sector the best advice possible. If you wish to make a comment, please email them to highwaysefficiency@DfT.gsi.gov.uk with the header 'Feedback on the Standard Specification and Standard Details' for local highway maintenance contracts.

INTRODUCTION

The Guidance for the Development of Standard Specification and Standard Details for Local Highway Maintenance Contracts has been prepared on behalf of the Highways Maintenance Efficiency Programme to provide a series of standard specification items and drawings for Local Highway Authorities maintenance works.

It has been recognised that the DfT published Manual of Contract Documents for Highways Works was originally developed for the specification of new works on the motorway and trunk road systems, and that it has limitations in its use when specifying maintenance materials for Local Highway Authorities.

Many Local Highway Authorities have, either individually or collaboratively, developed their own variations to the Manual of Contract Documents for Highways Works, illustrating the need for specific items to cover the works undertaken on non-motorway or trunk road routes.

The Highways Maintenance Efficiency Programme (HMEP) has collated these variations, drawn the common themes from the information provided by local authorities, identifying examples of good practice. Material specifications have been standardised where possible to enable cost savings and increased confidence in material quality to be achieved through a consolidation or rationalisation of the available information.

DOCUMENT RELEVANCE

During the development of this document it has been recognised that, to bring maximum benefit to users, additional work is required to expand the current HMEP specification to cover all works relating to highways undertaken by local authorities. In addition it is noted that the Department for Transport is in the process of updating the Specification for Highways Works. The nature and extent of this update is not known at present. As a result this document will require review and probable updating within 12 to 18 months.

This work will form part of HMEP product Brief 13 - Standard Term Maintenance Contract and Document Compiler. The scope of this package is to provide Term Maintenance Contract, Method of Measurement and Bill of Quantities for highway maintenance services associated with the two existing HMEP products (the Form of Contract and Specification).

This document is therefore released as an Interim Document to allow its use by local highways authorities as early enablers in the development of their term service contracts, feeding into the ongoing development of the Highway Maintenance Efficiency Programme Standard Term Maintenance Contract and Document Compiler work package.

Following completion of the Highway Maintenance Efficiency Programme Standard Term Maintenance Contract and Document Compiler this document will be revised to take into account feedback over the development period.

DOCUMENT LAYOUT

The Guidance for the Development of Standard Specification and Standard Details for Local Highway Maintenance Contracts document has been developed in three sections:

Section1: Guidance for the Development of Standard Specification and Standard Details for Local Highway Maintenance Contracts (This document)

The main document provides information on the background to the HMEP work undertaken to date, and on the development of this product.

Section 2: Appendix 1 - Specification and Notes For Guidance

Within the Specification section the project has been sub-divided into the relevant Specification for Highways Works series. Within each series section the work has been further divided into:

Specification - The HMEP document provides two forms of specification clauses. These are numbered as HMEP Cl. Xxx, and may be used as Substitute Clauses SR, replacing the current Specification for Highways Works Clause, or as an Additional Clauses AR to the existing Specification for Highways Works. Where additional Notes for Guidance for the Specification clause have been provided the full specification clause has been supplied.

Notes for Guidance – Where applicable notes for guidance for the alternate clause. These are highlighted in an orange box (shown below) and follow the relevant clause. These are numbered as HMEP NG Cl. Xxx

Additional Guidance – Where information has been obtained that can be used to aid decisions on the adoption of specification items, or where additional guidance is available from other sources, additional guidance notes have been included.

These are highlighted in an orange box (as above), and are numbered as HMEP AG xxx.xx.

Section 3: Appendix 2 - Standard Details

A number of standard detail drawings have been prepared to supplement those provided in the Manual of Contract Documents for Highways Works Highways Construction Details. These details have been prepared to provide additional standard details for local highways works on non-motorway or non-trunk road systems. They include additional drainage details for minor roads and footway construction details.

The drawings are numbered HMEP – XXX – YYY, where XXX is the Specification for Highways Works series number, and YYY is the sequential numbering for the drawings. These are available separately from this document for download from the HMEP website

as .pdf and .dwg files. These drawings may be referred to either in their original form in this document, or imported into specific contract documents.

In the event that the drawings are imported into contract documents the drawings should be renumbered as contract specific drawings in Appendix 0/4 of the new contract.

USE OF THE DOCUMENT

The intention of this document is to provide a set of current details and specification items that can be used as a core document in specifying highway maintenance services for local highway networks, complementing local details and methods of work.

When referring to a HMEP specification clause in your documentation use the following description

“in accordance with HMEP Clause XXXX”

This means that your reference will be taken from the HMEP Specification, which will ensure that it is up to date with any revisions.

Alternatively, consent is given for you to copy the entire clause from this document into your authorities’ specification. If you wish to copy items within this document this is acceptable, but will mean that your reference is only as up to date as the version of the document that you hold. References to the HMEP clause number should be removed and an AR or SR added.

When referring to a HMEP standard detail in your documentation use the following description

“in accordance with HMEP Standard Detail XXX.YYY”

This means that the reference in your document will be taken from the HMEP Standard Drawings, which will ensure that it is up to date with any revisions.

Alternatively, consent is given for you to copy the standard drawing from this document into your authorities’ document. If you wish to copy items within this document this is acceptable, but will mean that your standard detail drawing is only as up to date as the version of the document that you hold. References to the HMEP standard detail number should be removed from the drawing and replaced with your standard detail number taken from Appendix 0/4 in your document.

The following are answers to some frequently asked questions:

Q.Does this document replace the Manual of Contract Documents for Highway Works?

No – The Manual of Contract Documents for Highway Works will remain as the core set of documents for highways works. It is maintained by central government and provides the base documents for any highways work.

However, the Manual of Contract Document for Highway Works is more orientated to the construction and maintenance of motorways and trunk roads, and has omissions when used on minor regional roads. This document seeks to provide a set of documents that can be used to close that gap.

Q. Does this document replace my Local Highway Authorities standard drawings and specification?

No - In the same way that Councils use the existing Highways Agency standard details and specifications contained in the Manual of Contract Documents for Highways Works as their original contract document, and can write local variations for each contract or Package Order, this document can be used as a second level of core documents within a works package.

Q. I don't like this document item, mine is better. How do I change this document so everybody else can benefit?

If you feel that your idea is better than this document we want to know.

If you wish to make comments, please email them to highwaysefficiency@DfT.gsi.gov.uk

With the header 'Feedback on the Standard Specification and Standard Details'.

SPECIFICATION AND NOTES FOR GUIDANCE (APPENDIX 1)

As noted in previous sections, where the absence of specification items for, or the need for modification for use by local highways authorities in the existing Manual of Contract Documents for Highway Works Volume 3 – Specification for Highways Works have been noted additional or substitute clauses have been created from the information provided by the contributing local authorities. These clauses have been produced to support the standard specification and notes for guidance, and may be brought into the contract documentation of potential users by reference to the HMEP Clause number.

The additional or substitute clauses have been collated into Appendix 1 to this document, together with Notes for Guidance on the use of the clauses.

The following sections detail the findings of the HMEP project relating to the particular series of the Specification for Highways Works under examination.

SERIES 500 – DRAINAGE AND SERVICE DUCTS

Following review of the information provided by the contributing local authorities it became apparent that alterations to the Manual of Contract Documents for Highways Works and Specification for Highways Works for drainage works were limited, and that these could be attributed to individual projects or local variations. For the purposes of the project these were considered in light of their possible provenance and a judgement on their use taken, based upon common themes from other authorities.

One area that was highlighted as needing attention for maintenance works was the specification of methods and materials for the reinstatement of carriageway ironwork following localised failures. This has been carried forward into the work in Series 900.

Another area where a need for additional information was identified was in the provision of standard detail drawings for drainage works. While this area is fully covered in the Manual of Contract Documents for Highways Works - Highways Construction Details these details relate to works on new carriageways. After examining the standard details used by local highways authorities provided by the contributing authorities it became apparent that many of the details had been developed over time from a common source, possibly from details used for foul and surface water sewers when local authorities were responsible for their maintenance. These details have been collated and a series of standard details prepared to cover the majority of uses.

The table below lists the current Clauses from the Specification for Highways Works and alternate Clauses developed by the HMEP for local highways authority use. As noted above, in addition a range of standard detail drawings have been developed to cover the detailing of drainage works for local authority highway works.

Series 500 – Specification for Highways Works to HMEP Comparison			
Clause Number	**Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works**	**HMEP Clause Number**	**Highways Maintenance Efficiency Programme**
501	(05/01) Pipes for Drainage and Service Ducts	501 SR	Pipes for Drainage and Service Ducts
502	Excavation for Pipes and Chambers	502 SR	Excavation for Pipes and Chambers
503	(11/05) Bedding, Laying and Surrounding of Pipes	503 SR	Bedding, Laying and Surrounding of Pipes

Table Continued			
Clause Number	**Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works**	**HMEP Clause Number**	**Highways Maintenance Efficiency Programme**
504	Jointing of Pipes	504 SR	Jointing of Pipes
505	Backfilling of Trenches and Filter Drains	505 SR	Backfilling of Trenches and Filter Drains
506	Connecting to Existing Drains Chambers and Channels	-	-
507	(05/01) Chambers	507 SR	Chambers
508	Gullies and Pipe Junctions	508 SR	Gullies and Pipe Junctions
509	Testing and Cleaning	509 SR	Testing and Cleaning
510	Surface Water Channels and Drainage Channel Blocks	510 SR	Surface Water Channels and Drainage Channel Blocks
511	Land Drains	511 SR	Land Drains
512	Backfilling to Pipe Bays and Verges on Bridges	512 SR	Backfilling to Pipe Bays and Verges on Bridges
513	Permeable Backing to Earth Retaining Structures	513 SR	Permeable Backing to Earth Retaining Structures
514	Fin Drains	514 SR	Fin Drains
515	Narrow Filter Drains	515 SR	Narrow Filter Drains
516	Combined Drainage and Kerb Systems	516 SR	Combined Drainage and Kerb Systems
517	Linear Drainage Channel Systems	517 SR	Linear Drainage Channel Systems
518	(05/01) Thermoplastics Structured Wall Pipes and Fittings	518 SR	Thermoplastics Structured Wall Pipes and Fittings
519	(05/01) Concrete Bagwork	-	-

Table Continued			
Clause Number	**Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works**	**HMEP Clause Number**	**Highways Maintenance Efficiency Programme**
520	(05/01) The Cleaning of Existing Drainage Systems	520 SR	The Cleaning of Existing Drainage Systems
521	(11/03) Low Pressure High Volume Jetting of Drainage Systems	521 SR	Low Pressure High Volume Jetting of Drainage Systems
-	-	570 AR	Reinstatement of Failed Chamber Covers and Gully Gratings

SERIES 700 – ROAD PAVEMENTS - GENERAL

Following review of the information provided by the contributing local authorities it became apparent that alterations to the Manual of Contract Documents for Highways Works and Specification for Highways Works for Series 700 – Road Pavements were limited, and intermixed with Series 900 – Bituminous Bound materials.

It appeared that where alterations to the Manual of Contract Documents for Highways Works and Specification for Highways Works for Series 700 were specified it may have been as part of an individual project that had been carried forward by default into a general specification. For the purposes of the project these were considered in light of their possible provenance and a judgement on their use taken. As a result of this review it is not felt that there is sufficient evidence to justify alteration to the existing Series 700 Clauses to the Manual of Contract Documents for Highways Works and Specification for Highways Works.

The following table lists the current Clauses from the Specification for Highways Works for Series 700 – Road Pavements – General.

Series 700 – Specification for Highways Works to HMEP Comparison			
Clause Number	**Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works**	**HMEP Clause Number**	**Highways Maintenance Efficiency Programme**
701	(05/02) Pavement Construction	-	-
702	Horizontal Alignments, Surface Levels and Surface Regularity of Pavement Courses	-	-
706	(05/01) Excavation, Trimming and Reinstatement of Existing Surfaces	-	-
707	Breaking Up or Perforation of Redundant Pavement	-	-
709	(05/01) Cold-milling (Planing)of Bituminous Bound Flexible Pavement	-	-

Table Continued			
Clause Number	**Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works**	**HMEP Clause Number**	**Highways Maintenance Efficiency Programme**
710	(11/04) Testing for Constituent Materials in Recycled Aggregate and Recycled Concrete Aggregate	-	-
711	(05/01) Overband and Inlaid Crack Sealing Systems	-	-
712	(05/01) Maintenance of Arrester Beds	-	-
713	(05/01) Saw-cut and Seal Bituminous Overlays on Existing Jointed Concrete Pavements	-	-
714	(05/01) Preparation of Jointed Concrete Pavements Prior to Overlaying and Saw-cut and Seal of the Bituminous Overlays	-	-
715	(05/01) Saw-cut, Crack and Seat Existing Jointed Reinforced Concrete Pavements	-	-
716	(11/07) Cracking and Seating of Existing Jointed Unreinforced Concrete Pavements and Hydraulically Bound Mixture (HBM) Bases	-	-
717	(11/07) Monitoring of Cracked and Seated Jointed Unreinforced Concrete Pavements and HBM Bases Using the Falling Weight Deflectometer (FWD)	-	-
718	(11/07) Monitoring of Saw-cut, Cracked and Seated Jointed Reinforced Concrete Pavements Using the Falling Weight Deflectometer (FWD)	-	-

Table Continued			
Clause Number	Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works	HMEP Clause Number	Highways Maintenance Efficiency Programme
719	(11/07) Back-analysis of Falling Weight Deflectometer (FWD) Measurements Made on Concrete Pavements Treated by Fractured Slab Techniques	-	-

SERIES 900 – ROAD PAVEMENTS – BITUMINOUS BOUND MATERIALS

Of the total number of variations to the existing Manual of Contract Documents for Highways Works and Specification for Highways Works received from contributing authorities over 28% related to bituminous materials, indicating the probable need for standardisation of these items. From the specification examples provided it was found that, although there were a number of variations from the Manual of Contract Documents, Specification for Highways Works standard clauses, these could be attributed to the desire of the authority to update their individual specification to match current developments or guidance on the subject. Guidance notes from the Highways Agency have been examined from the date of release of the original clause, and specifications examined to provide the best material options for local authority highway maintenance works. Material specifications have been designed to maximise the service life of the material, while taking into account developments in low-carbon alternatives and carbon capture, and sustainable options such as recycled aggregates.

Consultation has also been undertaken with industry groups and with the ADEPT Soils and Materials Sub-Group who have provided valuable comments on the development of the following Clauses.

The table below lists the current Clauses from the Specification for Highways Works and alternate Clauses developed by the HMEP for local highways authority use.

Series 900 – Specification for Highways Works to HMEP Comparison			
Clause Number	**Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works**	**HMEP Clause Number**	**Highways Maintenance Efficiency Programme**
901	(08/08) Bituminous Pavement Mixtures	-	-
902	(08/08) Reclaimed Asphalt	-	-
903	(08/08) Placing and Compaction of Bituminous Mixtures	903 SR	Placing and Compaction of Bituminous Mixtures
904	(08/08) Hot Rolled Asphalt Base	-	-
905	(08/08) Hot Rolled Asphalt Binder Course (Recipe Mixtures)	-	-

Table Continued			
Clause Number	Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works	HMEP Clause Number	Highways Maintenance Efficiency Programme
906	(08/08) Dense Base and Binder Course Asphalt Concrete with Paving Grade Bitumen (Recipe Mixtures)	-	-
907	(08/08) Regulating Course	907 SR	Regulating Course
909	(08/08) 6 mm Dense Asphalt Concrete Surface Course	-	-
910	(08/08) Hot Rolled Asphalt Surface Course (Recipe Mixtures)	-	-
911	(11/08) Hot Rolled Asphalt Surface Course (Design Mixtures)	-	-
912	(08/08) Close Graded Asphalt Concrete Surface Course	-	-
914	(08/08) Fine Graded Asphalt Concrete Surface Course	-	-
915	(08/08) Coated Chippings for Application to Hot Rolled Asphalt Surfacing	-	-
916	(08/08) Open Graded Asphalt Concrete Surface Course	-	-
918	(08/08) Slurry Surfacing Incorporating Microsurfacing	-	-
919	(08/08) Surface Dressing: Recipe Specification	-	-
920	(08/08) Bond Coats, Tack Coats and Other Bituminous Sprays	-	-
921	(08/08) Surface Macrotexture of Bituminous Surface Courses	921 SR	Surface Macrotexture of Bituminous Surface Courses

Table Continued			
Clause Number	**Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works**	**HMEP Clause Number**	**Highways Maintenance Efficiency Programme**
922	(08/08) Surface Dressing: Design, Application and End Product Performance		
924	(08/08) High Friction Surfaces		
925	(08/08) Testing of Bituminous Mixtures		
926	(08/08) In Situ Recycling: The Repave Process		
929	(08/08) Dense Base and Binder Course Asphalt Concrete (Design Mixtures)		
930	(08/08) EME2 Base and Binder Course Asphalt Concrete		
937	(08/08) Stone Mastic Asphalt (SMA) Binder Course and Regulating Course		
938	(08/08) Porous Asphalt		
942	(08/08) Thin Surface Course Systems		
943	(08/08) Hot Rolled Asphalt Surface Course and Binder Course (Performance-Related Design Mixtures)	943 SR	Hot Rolled Asphalt Surface Course and Binder Course (Performance-Related Design Mixtures)
945	(08/08) Weather Conditions for Laying of Bituminous Mixtures		
946	(08/08) Patching and Repairs to Potholes and Depressions (Including Emergency Patching)	946 SR	Patching and Repairs to Potholes and Depressions (Including Emergency Patching)
947	(08/08) In Situ Cold Recycled Bound Material		

Table Continued			
Clause Number	**Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works**	**HMEP Clause Number**	**Highways Maintenance Efficiency Programme**
948	(08/08) Ex Situ Cold Recycled Bound Material	-	-
950	(08/08) Surface Preservation Systems	-	-
953	(08/08) Durability of Bituminous Materials -Saturation Ageing Tensile Stiffness (SATS) Test	-	-
954	(08/08) Method for Laboratory Determination of Interface Properties Using the Modified Leutner Shear Test	-	-
955	(08/08) Binder Recovery Using the Rapid Recovery Test (RRT) and Accelerated Ageing Using the Modified Ageing Rolling Thin Film Oven Test (RTFOT)	-	-
956	(08/08) Determination of the Complex Shear (Stiffness) Modulus (G*) and Phase Angle (δ) of Bituminous Binders Using a Dynamic Shear Rheometer (DSR)	-	-
957	(08/08) Determination of Cohesion of Bitumen and Bituminous Binders	-	-
958	(08/08) Modified Binder Storage Stability Test	-	-
-	-	970 AR	Coloured Surfacing for Lane Demarcation
-	-	971 AR	Stress Absorbing Membrane Interlayer (SAMI)
-	-	972 AR	Stone Mastic Asphalt Surface Course
-	-	973 AR	Retread Process

SERIES 1100 – KERBS, FOOTWAYS AND PAVED AREAS

The HMEP specification brief is directed towards the identification of potential costs savings through the standardisation of materials, and was originally limited to bituminous materials. Following review of the information provided by the contributing local authorities it became apparent that alterations to the Manual of Contract Documents for Highways Works and Specification for Highways Works for series 1100 were limited. The brief was expanded to cover general footway works, drawing on examples of good practice provided by contributing authorities.

From the specification examples provided it was found that, although there were a number of variations from the Manual of Contract Documents for Highways Works and Specification for Highways Works standard clauses these could be attributed to individual projects or local variations. For the purposes of the project these were considered in light of their possible provenance and a judgement on their use taken, based upon common themes from other authorities.

Substantial variations to precast concrete materials (kerbs and paving stones) were not found in the material provided by the contributing authorities, and as a result it was decided to remove this item from work under this project. Variations in flexible materials are dealt with in Series 900 – Bituminous Bound Materials.

One area where a need for additional information was identified was in the provision of standard detail drawings for footways. This area is absent from the Manual of Contract Documents for Highways Works, Highways Construction Details.

The table below lists the current Clauses from the Specification for Highways Works and alternate Clauses developed by the HMEP for local highways authority use. As noted above, in addition a range of standard detail drawings have been developed to cover the detailing of footway works for local authority highway works.

Series 1100 – Specification for Highways Works to HMEP Comparison			
Clause Number	**Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works**	**HMEP Clause Number**	**Highways Maintenance Efficiency Programme**
1101	Precast Concrete Kerbs, Channels, Edgings and Quadrants	1101 SR	Precast Concrete Kerbs, Channels, Edgings and Quadrants
1102	(11/04) In-Situ Asphalt Kerbs	-	-
1103	(11/04) Freestanding In-Situ Concrete Kerbs, Channels and Edge Details	-	-
1104	(05/01) Footways and Paved Areas (Precast Concrete Flags and Natural Stone Slabs)	1104 SR	Footways and Paved Areas (Precast Concrete Flags and Natural Stone Slabs)
1105	(11/04) Footways and Paved Areas (Flexible Surfacing)	1105 SR	Footways and Paved Areas (Flexible Surfacing)
1106	(11/04) Footways and Paved Areas (In-Situ Concrete)	-	-
1107	Footways and Paved Areas (Concrete Block Paving)	-	-
1108	Footways and Paved Areas (Clay Pavers)	-	-
1109	(11/04) Grass Concrete Paving	-	-
1110	(05/01) Access Steps	-	-
-	-	1170 AR	Frost Susceptibility
-	-	1171 AR	Footway Slurry Sealing
-	-	1172 AR	Wheel Chair Ramps
-	-	1173 AR	Timber Edging

SERIES 1200 – TRAFFIC SIGNS ROAD MARKINGS AND ROAD STUDS

The HMEP specification brief is directed towards the identification of potential costs savings through the standardisation of materials, and was limited to road marking materials and road studs for this section of the project. From the information received from contributing authorities for these works authorities it became apparent that alterations to the Manual of Contract Documents for Highways Works and Specification for Highways Works for road markings and road studs were limited, and associated to individual projects rather than the procurement of bulk works.

The table below lists the current Clauses from the Specification for Highways Works. Following review of the information provided by local highways authorities and other external bodies for this brief it is considered that the current Specification for Highways Works should be used for this Series.

Series 1200 – Specification for Highways Works to HMEP Comparison			
Clause Number	**Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works**	**HMEP Clause Number**	**Highways Maintenance Efficiency Programme**
1201	Regulations, Sign Classification and Standards	-	-
1202	General Requirements for Permanent Traffic Signs	-	-
1203	Foundations for Permanent Traffic Signs and Signals	-	-
1204	Posts for Permanent Traffic Signs	-	-
1205	Sign Plates for Permanent Traffic Signs	-	-
1206	Faces for Permanent Traffic Signs	-	-
1207	Construction and Assembly of Permanent Traffic Signs	-	-
1208	Location and Erection of Permanent Traffic Signs	-	-
1209	Covering of Permanent Traffic Signs	-	-

Table Continued			
Clause Number	Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works	HMEP Clause Number	Highways Maintenance Efficiency Programme
1210	Permanent Bollards	-	-
1211	Permanent Marker Posts	-	-
1212	(05/01) Road Markings	-	-
1213	(05/01) Road Studs	-	-
1214	Traffic Cones, Traffic Cylinders, Flat Traffic Delineators and Other Traffic Delineators	-	-
1215	Road Danger Lamps and High Intensity Flashing Beacons	-	-
1216	Temporary Traffic Signs	-	-
1217	Traffic Signals	-	-
1218	Detector Loops	-	-
1219	Controlled and Un-controlled Crossings	-	-
1220	Traffic Signs on Gantries	-	-
1221	Preparation and Finish of Metal and Other Surfaces	-	-

SERIES 1300 – ROAD LIGHTING COLUMNS AND BRACKETS

The HMEP specification is directed towards the identification of potential costs savings through the standardisation of materials, and was limited to Road Lighting Columns and Brackets for this section of the project. Examination of lighting units, bulbs and electrical systems were excluded from the project.

Limited information was available from contributing authorities for these works, and following further investigation it became apparent that many authorities had delegated the specification of lighting units to specialist maintenance contractors. The one area that was identified as a possible source of saving was through the standardisation of street lighting column units. This was originally identified by the Eastern Shires Purchasing Organisation, and was developed to provide a greater column lifespan to promote long term savings in column replacement.

One other factor that was identified was that improvements to the design of lighting units has greatly reduced the need for bracket arms on most single and dual carriageway roads. As a result the work on the specification of lighting brackets was removed from the project.

The table below lists the current Clauses from the Specification for Highways Works and alternate Clauses developed by the HMEP for local highways authority use. In addition a range of standard detail drawings have been developed to cover the detailing of lighting columns to the specification below, that may be used on local authority highways.

Series 1300 – Specification for Highways Works to HMEP Comparison			
Clause Number	**Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works**	**HMEP Clause Number**	**Highways Maintenance Efficiency Programme**
1301	(05/01) General	1301 SR	General
1302	(11/03) Design of Lighting Columns, Brackets, CCTV Masts, Cantilever Masts, Foundations, Anchorages and Attachment Systems	1302 SR	Design of Lighting Columns, Brackets, CCTV Masts, Cantilever Masts, Foundations, Anchorages and Attachment Systems
1303	(05/01) Data Sheets	-	-
1304	(05/01) Identification and Location Markings	1304 SR	Identification and Location Markings

Table Continued			
Clause Number	**Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works**	**HMEP Clause Number**	**Highways Maintenance Efficiency Programme**
1305	Installation of Foundations, Anchorages and Attachment Systems	-	-
1306	Site Tests on Anchorages in Drilled Holes	-	-
1307	Materials and Surface Finishes	-	-
1308	(05/01) Handling, Transport and Erection	1308 SR	Handling, Transport and Erection
1309	(11/04) Amendments and Additions to BS 5649-2: 1978 (AMD 3136, 1979) for Lighting Columns	-	-
1310	(11/04) Amendments and Additions to BS EN 40-5 and BS EN 40-6 for Lighting Columns and Brackets, CCTV Masts and Cantilever Masts	-	-
1311	(11/04) Amendments and Additions to BS 5649-5 for Lighting Columns, CCTV Masts and Cantilever Masts	-	-
1312	(11/03) Attachments to Lighting Columns, CCTV Masts and Cantilever Masts	-	-
1313	(05/01) Laminated Glass Fibre Reinforced Plastic (GFRP) Lighting Columns	-	-
1314	Brackets for Laminated GFRP Lighting Columns	-	-

SERIES 1700 – STRUCTURAL CONCRETE

Following review of the information provided by the contributing local authorities it became apparent that alterations to the Manual of Contract Documents for Highways Works, Specification for Highways Works for structural concrete were limited. It was assumed that where structural concrete is specified it is normally as part of an individual project relating to a single structure, and is designed, specified and detailed to comply with current standards applicable at that time. Its use in the replacement or repair of structures is not a common occurrence for local highway authorities. This assumption was mirrored in the review of the information provided by local highways authorities, where no indication of the use of structural concrete was found

Most local authority works are associated with the routine inspection and maintenance of concrete structures, and not with the replacement or renewal of the structure itself. As a result the focus of this section of the brief was altered to develop specification clauses for the repair and maintenance of structural concrete

The table below lists the current Clauses from the Specification for Highways Works and alternate Clauses developed by the HMEP for local highways authority use for the repair of concrete structures.

Series 1800 – Specification for Highways Works to HMEP Comparison			
Clause Number	**Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works**	**HMEP Clause Number**	**Highways Maintenance Efficiency Programme**
1701	(05/04) Concrete - General 2	-	-
1702	(05/04) Concrete - Constituent Materials 2	-	-
1703	(05/04) Concrete - Exposure Classes 2	-	-
1704	Concrete - General Requirements 3	-	-
1705	(05/04) Concrete - Requirements for Designed Concrete 3	-	-
1706	Concrete - Production 4	-	-
1707	(05/04) Concrete - Conformity and Identity Testing 4	-	-
1708	Concrete - Surface Finish 4	-	-
1709	(05/01) Concrete - Surface Impregnation 6	-	-

Table Continued			
Clause Number	Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works	HMEP Clause Number	Highways Maintenance Efficiency Programme
1710	Concrete - Construction General 8	-	-
1711	(05/01) Concrete - Grouting and Duct Systems For Post-tensioned Tendons 12	-	-
1712	(05/01) Reinforcement - Materials 17	-	-
1713	(05/02) Carbon Steel Reinforcement and Stainless Steel Reinforcement - Bar Schedule Dimensions - Cutting and Bending 18	-	-
1714	Reinforcement - Fixing 18	-	-
1715	Reinforcement - Surface Condition 18	-	-
1716	(05/01) Reinforcement - Laps and Joints 18	-	-
1717	Reinforcement - Welding 19	-	-
1718	Prestressing Tendons - Materials 19	-	-
1719	Prestressing Tendons - Handling and Storage 19	-	-
1720	Prestressing Tendons - Surface Condition 20	-	-
1721	Prestressing Tendons - Straightness 20	-	-
1722	Prestressing Tendons - Cutting 20	-	-
1723	Prestressing Tendons - Positioning of Tendons, Sheaths and Duct Formers 20	-	-
1724	Prestressing Tendons - Tensioning 20	-	-

Table Continued			
Clause Number	**Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works**	**HMEP Clause Number**	**Highways Maintenance Efficiency Programme**
1725	Prestressing Tendons - Protection and Bond 22	-	-
1726	Stainless Steel Dowels - Materials 22	-	-
1727	Inspection and Testing of Structures and Components 22	-	-
-	-	1728AR	Concrete repairs – General
-	-	1729AR	Concrete repair – preparation of substrate
-	-	1730AR	Concrete Injection
-	-	1731AR	Structural and non-structural repair
-	-	1732AR	Structural bonding
-	-	1733AR	Quality control

SERIES 1800 – STRUCTURAL STEELWORK

While the cost of structural steel may be considerable when compared to other highways construction and maintenance materials, its use in the replacement or repair of structures is not a common occurrence for local highway authorities. Where structural steel is specified it is normally as part of an individual project relating to a single structure, and is designed, specified and detailed to comply with current standards applicable at that time. Most local authority works are associated with the routine inspection and maintenance of steel structures, and not with the replacement or renewal of the structure itself. This assumption was mirrored in the review of the information provided by local highways authorities, where no indication of the use of structural steel was found.

Following the review of the information provided by local highways authorities and other external bodies it is considered that the current Specification for Highways Works should be used for this Series, subject to updates by the user to comply with changes to the Specification required by the adoption of Eurocodes (see Additional Guidance note HMEP AG 1800 001- SERIES SUBSTITUTION)

The table below lists the current Clauses from the Specification for Highways Works.

Series 1800 – Specification for Highways Works to HMEP Comparison			
Clause Number	**Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works**	**HMEP Clause Number**	**Highways Maintenance Efficiency Programme**
1801	General 2	-	-
1802	Surface Preparation and Protection Against Corrosion 2	-	-
1803	(05/04) Amendments and Additions to BS 5400 : Part 6 : 1999 (Amd. No. 13715, 3 October 2002)	-	-

Series 1800 of the Manual of Contract Documents for Highway Works Specification for Highways Works has not been updated to include current developments in Euro Codes.

It is recommended that consideration is given to the use of:

The Steel Construction Industry publication SCI P382 Steel Bridge Group: Model Project Specification For the Execution of Steelwork in Bridge Structures, published by The Steel Construction Institute, Silwood Park, Ascot, Berkshire SL5 7QN (© 2009 The Steel Construction Institute) http://www.steel-sci.com/

WINTER MAINTENANCE MATERIALS

The HMEP specification brief is directed towards the identification of potential costs savings through the standardisation of materials. From the information received from contributing authorities for winter maintenance works the most common form of material used for de-icing public highways is road salt. The use of road salt for de-icing and the specification of winter maintenance services and materials has been the subject of research outside the Manual of Contract Documents Specification for Highways Works, and detailed guidance is provided in Appendix 1.

Following review of available documents it is not felt that there is a need to contribute further to the subject.

STANDARD DETAIL DRAWINGS

(APPENDIX 2)

As noted in previous sections, where the absence of standard detail drawings in the existing Manual of Contract Documents for Highway Works Volume 3 - Highway Construction Details have been noted (such as footway construction) additional detail drawings have been created from the information provided by the contributing local authorities. These details have been produced to support the standard specification and notes for guidance, and may be brought into the contract documentation of potential users by reference to the entire document or individual drawing numbers in Appendix 0/4 to the Specification.

The Highway Construction Details (HCD) is published as Volume 3 of the Manual of Contract Documents for Highway Works and contains standard drawings for use in the construction, improvement and maintenance of local authority roads and footways.

The numbers, titles and dates of the individual drawings, or parts of drawings, included in the Contract should be listed in Appendix 0/4 in the Specification section of the authorities contract.

The following apply to each drawing unless otherwise stated thereon:

1. Specification for Highways Works means the Specification for Highway Works published by The Stationery Office as Volume 1 of the Manual of Contract Documents for Highway Works.

2. HMEP means the Highways Maintenance Efficiency Programme Standard Specification and Standard Details For Local Highway Maintenance.

3. Reference to a Clause prefaced by Cl. is a reference to a Clause of the Specification for Highway Works.

4. Reference to a Clause prefaced by HMEP Cl. is a reference to a Clause of the Highways Maintenance Efficiency Programme Standard Specification.

5. Reference to a Numbered Appendix (e.g. Appendix 3/1) is a reference to a Numbered Appendix to the Specification.

The relevant publication date of each Clause is to be determined from the Schedule of Pages and Relevant Publication Dates in the Specification.

The relevant publication date of each British Standard (BS) and other reference document referred to in the HCD is to be determined in accordance with Clause 004 of the specification.

LIST OF DRAWINGS

Drawing No.	Drawing Title	Date
Series 500 – Drainage and Service Ducts		
HMEP/0500/001	Type 2 Chamber (Precast Concrete Manhole)	11/12
HMEP/0500/002	Type 3 Chamber (Precast Concrete Manhole)	11/12
HMEP/0500/003	Type 4 Chamber (Precast Concrete Manhole)	11/12
HMEP/0500/004	Type 5 Chamber (Precast Concrete Manhole)	11/12
HMEP/0500/005	Backdrop Details	11/12
HMEP/0500/006	Soakaway – precast Concrete construction	11/12
HMEP/0500/007	Precast and Insitu Cast Gullies	11/12
HMEP/0500/008	Headwalls Type 1 and 2	11/12
HMEP/0500/009	Headwalls Type 3 and 4	11/12
HMEP/0500/010	Headwall Type 5 and Ditch Lining Detail	11/12
Series 700 – Road Pavements - General		
	None	
Series 900 – Road Pavements – Bituminous Bound Materials		
	None	
Series 1100 – Footways and Paved Areas		
HMEP/1100/001	Textured Modular Paving and Precast Concrete Paving Slabs Paving	11/12
HMEP/1100/002	Footway Edging Kerbs PCC and Timber	11/12
HMEP/1100/003	Standard Kerbing Detail	11/12
HMEP/1100/004	Flush Uncontrolled Pedestrian Dropped Crossing	11/12
HMEP/1100/005	Vehicle Crossing Standard Detail (Commercial)	11/12
HMEP/1100/006	Vehicle Crossing Standard Detail (Residential)	11/12
HMEP/1100/007	Raised Bus Kerbs – Standard Detail	11/12

Drawing No.	Drawing Title	Date
HMEP/1100/008	Precast Concrete Pedestrian Block Paving – Light Traffic	11/12
HMEP/1100/009	Flexible Footway – Pavement Construction Details	11/12
Series 1300 – Road Lighting Columns and Brackets		
HMEP/1300/001	5 and 6 Metre Tubular Steel Column (Post Top)	10/12
HMEP/1300/002	8 Metre Tubular Steel Column (Post Top)	10/12
HMEP/1300/003	10 Metre Tubular Steel Column (Post Top)	10/12
HMEP/1300/007	Tubular Steel Column Mid Hinged 5, 6 and 8 Metre (Post Top)	10/12
HMEP/1300/008	Details of Tubular Steel – steel base hinged 5, 6, 8, and 10 Metre	10/12
HMEP/1300/009	Single Arm for 8 and 10 Metre Column Bracket Detail	10/12
HMEP/1300/010	Double Arm for 8 and 10 Metre Column Bracket Detail	10/12
HMEP/1300/011	Single Arm for 5 and 6 Metre Column Bracket Detail	10/12
HMEP/1300/012	Post Top Mounted Spigot Adaptor for 8 and 10 Metre Column	10/12
HMEP/1300/019	Column and Bracket Manufacturer Identification Labels	10/12
Series 1700 – Structural Concrete		
	None	
Series 1800 – Structural Steelwork		
	None	

Standard Detail Drawings will be made available separately from this document for download from the HMEP website in the form of .pdf files.

ABBREVIATIONS USED

ADEPT	Association of Directors of Environment, Economy, Planning and Transport http://www.adeptnet.org.uk/
APSE	Association for Public Service Excellence http://www.apse.org.uk/
BBA	British Board of Agreement http://www.bbacerts.co.uk/
DMRB	Design Manual for Roads and Bridges http://www.dft.gov.uk/ha/standards/dmrb/index.htm
HAPAS	Highway Authorities Product Approval Scheme http://www.bbacerts.co.uk/product-approval/hapas.aspx
HCD	Highways Construction Details – Volume 3 of the Manual of Contract Documents for Highways Works http://www.dft.gov.uk/ha/standards/mchw/vol3/index.htm
HTMA	Highways Term Maintenance Association http://www.htma.co.uk/
LHAs	Local Highways Authorities
LoTAG **TAG**	London Technical Advisers Group Technical Advisers Group http://www.lgtag.com/
MCHW	Manual of Contract Documents for Highway Works http://www.dft.gov.uk/ha/standards/mchw/index.htm
NG	Notes for Guidance on the Specification for Highway Works - Volume 2 of the Manual of Contract Documents for Highways Works http://www.dft.gov.uk/ha/standards/mchw/vol2/index.htm
SHW	Specification for Highways Works- Volume 1 of the Manual of Contract Documents for Highways Works http://www.dft.gov.uk/ha/standards/mchw/vol1/index.htm
TfL	Transport for London
W-mH	Well-maintained Highways UK Roads Liaison Group – Well - Maintained Highways

Unless specifically defined otherwise the definitions of terms used in this document are those in BS 6100, Glossary of Building and Civil Engineering Terms.

TECHNICAL ABBREVIATIONS USED

AASHTO	American Association of State Highway and Transportation Officials
AAV	Aggregate Abrasion Value
AISI	American Iron and Steel Institute
AMD	Amendment to British Standard
ASR	Alkali Silica Reaction
ASTM	American Society for Testing and Materials
BBA	British Board of Agrément
BRE	Building Research Establishment Ltd
BS	British Standard
BSI	British Standards Institution
CBM	Cement Bound Material
CBR	California Bearing Ratio
CHS	Circular Hollow Section
CP	British Standard Code of Practice
EN	European Standard
FTD	Flat Traffic Delineator
HAPAS	Highway Authorities' Product Approval Scheme
HCD	Highway Construction Details
HMSO/TSO	Her Majesty's Stationery Office/The Stationery Office
HSE	Health and Safety Executive
ISO	International Organization for Standardization
MCV	Moisture Condition Value
MDPE	Medium Density Polyethylene
PC	Portland Cement
PRD	Percentage Refusal Density
PSV	Polished Stone Value
PVC	Polyvinyl Chloride
RHS	Rectangular Hollow Section
SI	Statutory Instrument
SMC	Saturation Moisture Content
TRL	(formerly TRRL) Transport Research Laboratory (formerly Transport and Road Research Laboratory)
UKAS	United Kingdom Accreditation Service
PVC-U	Un-plasticised Polyvinyl Chloride
XLPE	Cross-linked Polyethylene
DC	direct current
dft	dry film thickness
ggbs	ground granulated blast furnace slag
mc	moisture content
mdft	minimum dry film thickness (of paint)
omc	optimum moisture content
pfa	pulverised-fuel ash

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North Tyneside Metropolitan Borough Council	North Yorkshire County Council
Nottingham City Council	Nottinghamshire County Council
Peterborough City Council	Plymouth City Council
Redcar and Cleveland Council	Road Surface Marking Association
Road Surface Treatment Association	Rutland Council
Salt Association	Slough Council
Staffordshire County Council	Steel Construction Institute
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